1000 to 5000 lines and 5000 to 10000 lines.

(h) The higher costs of operation and maintenance in remote areas are not reflected in BCM2.

(I) Use of a road system to determine where households are assumes that if there are no roads the are no people. That is incorrect.

(j) BCM2 caps loop costs at $10,000, assuming that wireless would be used for areas with costs above that. However, it may be impossible to serve those people with wireless service due to technical, environmental or logistical problems, including the lack of electricity.

(k) BCM2 also assumes the same traffic factors exist nationwide, even though the nature of traffic is significantly different between serving areas around the country.

(l) BCM2 does not attempt to model specific interoffice network costs.

(m) BCM2 plant specific annual cost factors are lower than the ARMIS factors in BCM. There is no documentation for these lower factors.

(n) BCM2 includes remote switches, which is an improvement over BCM, however, BCM2 merely places remote according to current practices rather than determining where a remote should replace a small stand alone unit.

(o) The model assumes square CBGs which under estimates the loop costs to the extent the CBGs are not square.

Despite the fact that BCM2 needs to be modified and justified substantially to make it usable for even high cost fund determination purposes, it is, in our opinion, the only model that has any hope of being useful. The other models are so seriously flawed that we do not believe any amount of work or modification can remedy their serious deficiencies.

California Pricing Model (CPM)

Parties claim that CPM is little more than a spreadsheet on which are collected input values based on proprietary data, undocumented judgements or assumptions and the outputs of other models. CPM reflects embedded rather than forward-looking costs. CPM's inconsistent use of terrain modifying factors artificially inflates loop investment costs. CPM bases central office switch and feeder costs solely on average population density of the grid, ignoring the number of lines serviced by the switch, and employs unrealistically short depreciation lives.

Parties comments state that the switching costs in the CPM do not fully capture the deference in unit costs between large and small switches and the level of costs used by Pacific are not representative of those experienced by other companies because of unique contracts Pacific has negotiated with its switch suppliers. This is a common complaint about all the models.

CPM has drawbacks which limit its application on a national basis. On of the most obvious drawbacks is the fact that CPM employs proprietary data on the location of all residential and business customers

Hatfield Model

One major concern of the BCM 1 is the use of multiplicative factors to drive most of its costs as a function of materials costs, the incorrect specification of structure costs as a function of cable size, and the distribution plan algorithm. The model places 400 pair cable in places that are actually likely to be served by 25 pair cable. While many concerns have been addressed in BCM

2, these concerns are worth noting because they are still contained in the Hatfield Model, which is based on the BCM1.

This model suffers from numerous deficiencies:

(a) It would appear that the revisions to the Hatfield model are result driven and the model can be adjusted to produce whatever cost answer its sponsors desire.

(b) Fill factors are too high, costs of capital are too low and depreciation rates that are too slow.

(c) The model does not seem to have been run through the set of theoretical and empirical tests that are routinely used to ferret out modeling errors.

(d) The model like BCM1 from which it was derived contains a anomaly; doubling the price of cable results in a near doubling of the cost of installation. Thus, under estimates for material needs or costs are amplified by the model.

(e) The model does provide estimates sufficiently accurate for use by small companies because of the wide variation from actual experienced material costs.

(f) The model seems to use unrealistic switch prices and installation costs.

(g) The model employs unrealistically low cable facilities costs.

(h) Hatfield omitted certain costs such as engineering and cable splicing costs.

(i) Hatfield does not model the current methods of deploying distribution plant.

(j) The Hatfield model uses copper for very long loops but does not provide for conditioning, amplification, or loading costs.

(k) The model uses a mathematical construct to determine customer locations without

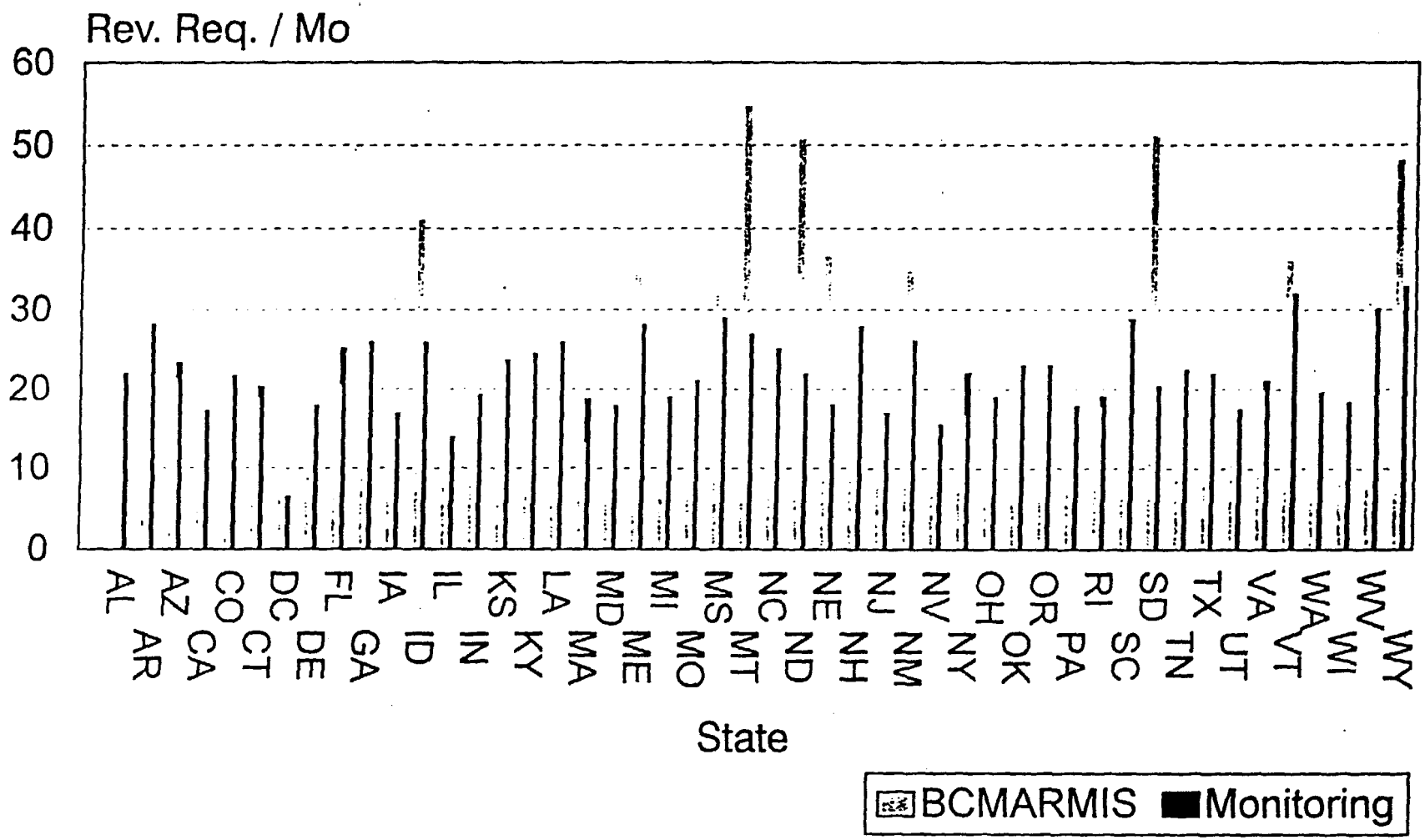
Comparison of Models Revenue Requirement/Mo and Monitoring Loop Rev. Req. /MO

State	BCM ARMIS	BCMM/H	Hatfield	Monitoring Annual	Monitoring Monthly
AL	$26.46	$19.19	$20.22	$264.00	$22.00
AR	$33.56	$24.34	$23.41	$338.00	$28.17
AZ	$21.26	$15.41	$15.94	$280.00	$23.33
CA	$18.05	$13.09	$13.49	$207.00	$17.25
CO	$25.80	$18.71	$17.84	$260.00	$21.67
CT	$18.80	$13.63	$17.27	$244.00	$20.33
DC	$11.19	$8.11	$17.07	$77.00	$6.42
DE	$21.93	$15.90	$16.48	$214.00	$17.83
FL	$20.40	$14.79	$17.11	$301.00	$25.08
GA	$27.49	$19.93	$17.77	$311.00	$25.92
IA	$31.58	$22.90	$16.33	$202.00	$16.83
ID	$40.94	$29.69	$17.80	$310.00	$25.83
IL	$20.73	$15.03	$17.38	$167.00	$13.92
IN	$20.58	$14.93	$16.63	$231.00	$19.25
KS	$33.01	$23.94	$21.71	$284.00	$23.67
KY	$25.45	$18.46	$20.64	$294.00	$24.50
LA	$26.45	$19.18	$18.74	$311.00	$25.92
MA	$13.12	$9.52	$15.25	$225.00	$18.75
MD	$18.56	$13.46	$17.80	$214.00	$17.83
ME	$34.24	$24.83	$19.32	$337.00	$28.08
MI	$22.95	$16.64	$18.96	$227.00	$18.92
MO	$28.43	$20.61	$20.51	$252.00	$21.00
MS	$32.04	$23.24	$26.49	$347.00	$28.92

State	BCM ARMIS	BCM M/H	Hatfield	Monitoring Annual	Monitoring Monthly
MT	$54.58	$39.58	$20.41	$323.00	$26.92
NC	$27.32	$19.81	$18.95	$301.00	$25.08
ND	$50.60	$36.69	$21.96	$263.00	$21.92
NE	$36.53	$26.49	$20.19	$217.00	$18.08
NH	$28.31	$20.53	$18.10	$335.00	$27.92
NJ	$16.86	$12.23	$16.03	$203.00	$16.92
NM	$34.67	$25.14	$18.51	$313.00	$26.08
NV	$29.17	$21.15	$21.32	$186.00	$15.50
NY	$16.58	$12.02	$16.58	$264.00	$22.00
OH	$21.40	$15.52	$20.44	$227.00	$18.92
OK	$26.59	$19.28	$21.17	$276.00	$23.00
OR	$27.99	$20.29	$16.63	$276.00	$23.00
PA	$20.24	$14.67	$15.08	$214.00	$17.83
RI	$17.67	$12.82	$15.23	$229.00	$19.08
SC	$28.55	$20.70	$18.77	$346.00	$28.83
SD	$51.02	$37.00	$21.88	$245.00	$20.42
TN	$27.27	$19.77	$20.09	$269.00	$22.42
TX	$25.14	$18.23	$16.96	$264.00	$22.00
UT	$28.01	$20.31	$16.45	$209.00	$17.42
VA	$19.85	$14.39	$18.43	$252.00	$21.00
VT	$36.02	$26.12	$21.88	$383.00	$31.92
WA	$23.48	$17.03	$14.94	$235.00	$19.58
WI	$27.18	$19.71	$16.68	$220.00	$18.33
WV	$31.44	$22.80	$23.42	$361.00	$30.08
WY	$48.14	$34.91	$23.16	$394.00	$32.83

Monthly Revenue Requirment

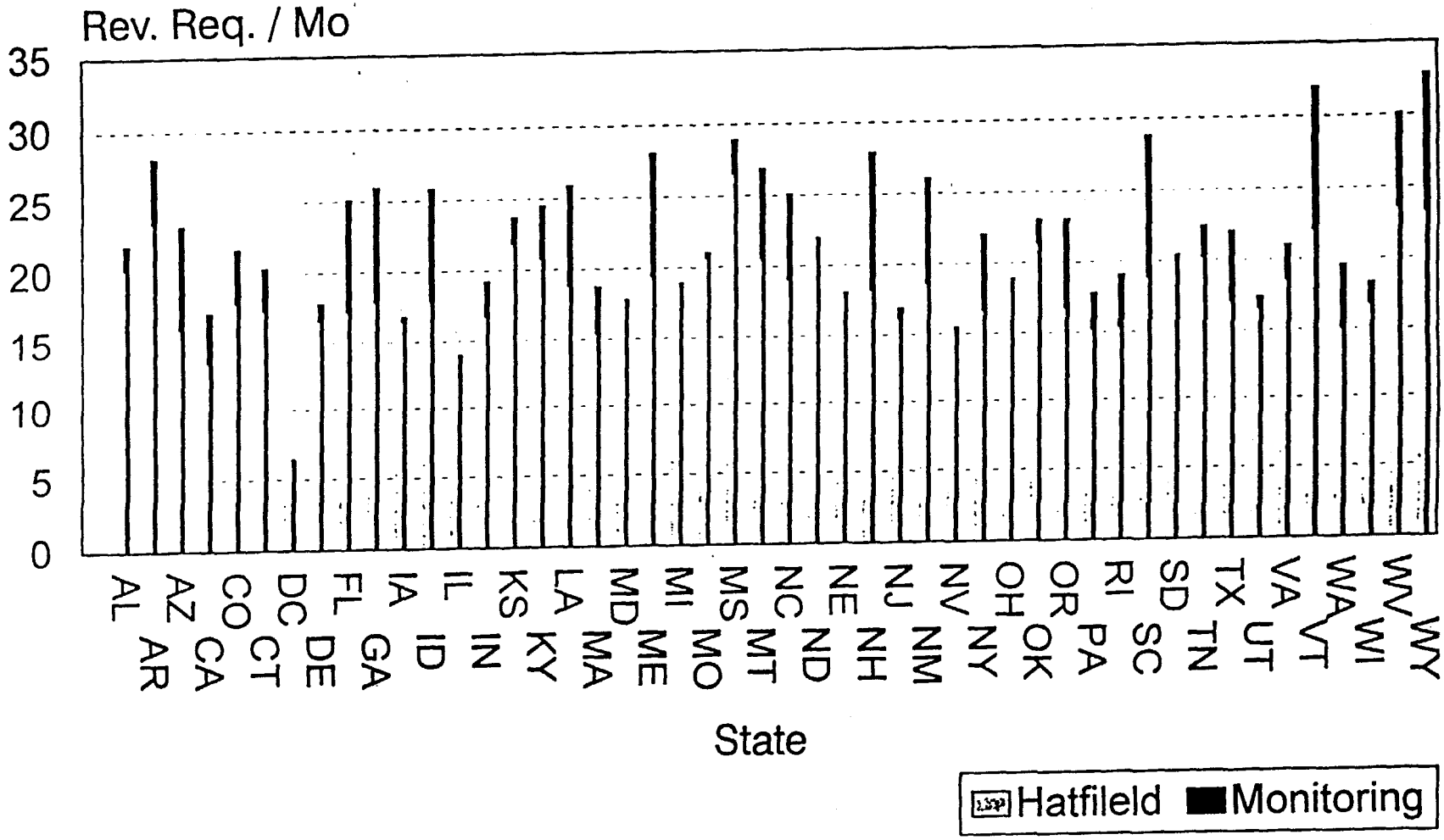
Models vs Actual



Source USW Comments 8-9-96 & Monitoring Report 87-339

Monthly Revenue Requirment

Models vs Actual



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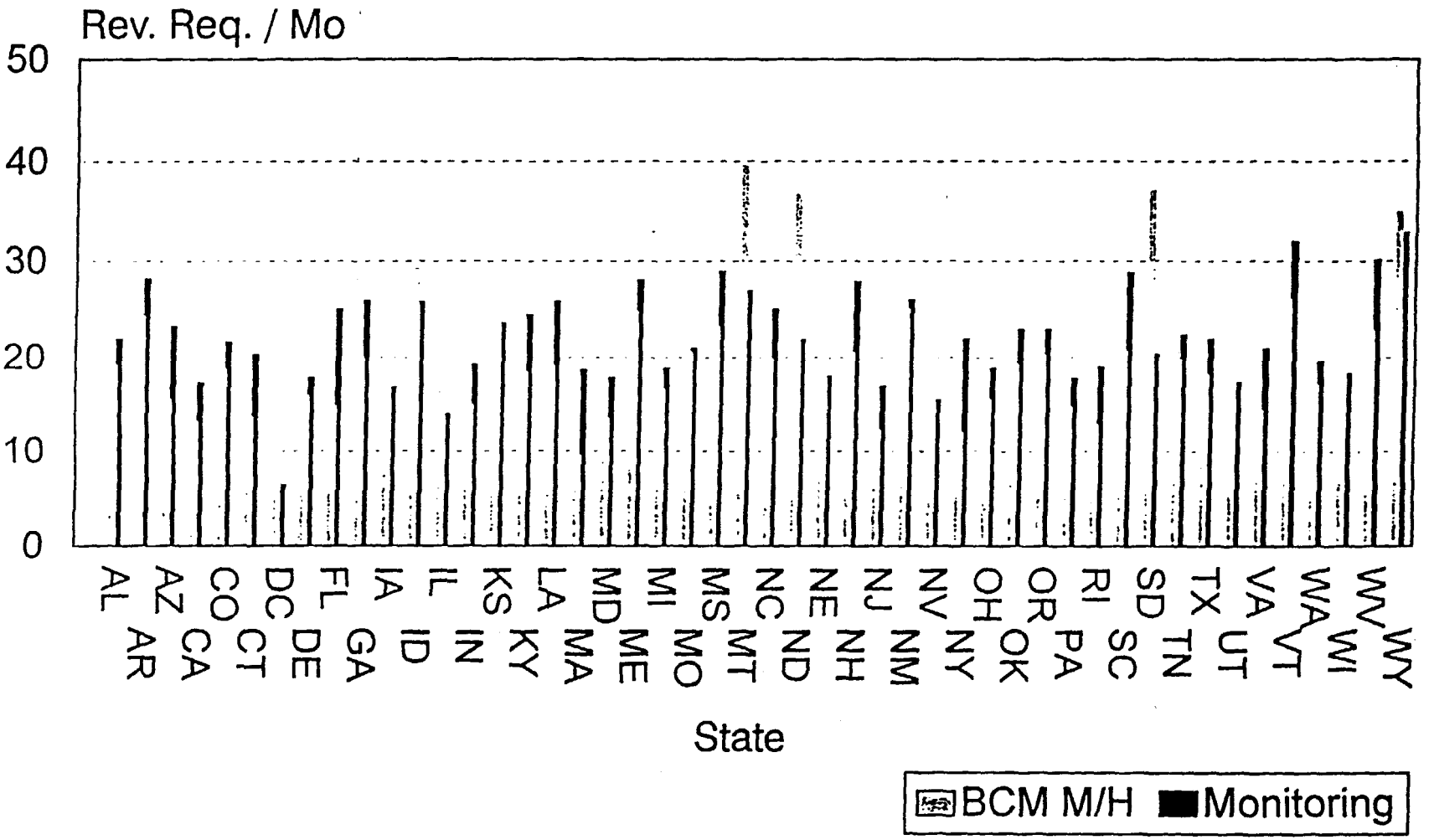
Monthly Revenue Requirment

Models vs Actual



Source USW Comments 8-9-96 & Monitoring Report 87-339

CHAPTER 4

SUMMARY OF PARTIES COMMENTS

Brief Summary of Issues

Alaska PUC

Rural companies should be allowed to obtain universal service support based on actual book costs instead of proxy costs.

Rural companies should transition off of book costs if and only if it can be demonstrated that the models reflect the cost of small companies and if there are streamlined waiver procedures to use alternative methods.

The proxy models do not capture unique characteristics such as: glaciers, permafrost and ice effects; the lack of road system; limitations placed on surface transportation and construction due to Arctic conditions; and high labor costs.

Ameritech

Supports the use of actual wire center costs, not the use of any proxy model.

A wire center should be used because it is the basis upon which network costs are incurred.

Since the standard upon which the proxy models are being judged is their ability to replicate actual costs, simply use actual book costs.

When proxy models are improved, but should not be used to size the US fund.

AT&T

Only a model that keeps subsidies to the minimum levels necessary to provide affordable service in high cost areas.

The Hatfield model is a flexible, publicly available model that estimates the economic costs of providing basic narrowband services. It is based on a modular and open architecture in which the vast majority of critical data inputs are user adjustable. The model uses many default values out of necessity because ILECs have refused to provide more accurate data Contrary to criticisms of the model, in simulating the construction of an efficient network that would be built in a competitive environment, Hatfield incorporates realistic assumptions concerning present abilities to adopt and implement efficient, cost-minimizing production techniques. It uses actual minutes of use and access line numbers reported by the ILECs and models the network from existing ILEC wire center and STP locations. The local service cost estimates produced by Hatfield reflect all of the forward-looking costs of installing, maintaining, and operating all facilities necessary to supply basic residential service, including shared costs.

BCM1 only estimates loop and switching capital costs, and does not include algorithms to calculate the cost of other facilities necessary to provide basic telephone, e.g., interoffice

facilities). The most basic flaw in BCM1 is its undocumented assumption that existing networks are sized efficiently to provide basic telephony services. BCM1 uses fill factors as low as 25%, resulting in a modeled network capable of handling basic telephony traffic many times over. Many of the shortcomings of BCM1 remain uncorrected in BCM2. Where BCM2 makes refinements, they are typically less sophisticated and unrealistic than those made in Hatfield. For example, BCM2 continues to use unrealistic fill and capacity utilization assumptions.

CPM is little more than a spreadsheet on which are collected input values based on proprietary data, undocumented judgements or assumptions and the outputs of other models. CPM reflects embedded rather tan forward-looking costs. CPM's inconsistent use of terrain modifying factors artificially inflates loop investment costs. CPM bases central office switch and feeder costs solely on average population density of the grid, ignoring the number of lines serviced by the switch, and employs unrealistically short depreciation lives.

BellSouth

Universal service support should be based on embedded costs of the incumbent LEC. Such costs reflect the costs of the network that is in place and used to provide universal service. Essential to implementing a proxy cost model is that it is accomplished in a revenue neutral manner.

BCM

The flaws in the BCM include:

(a) sparsely populated areas due to the model's assumption that all households are

evenly distributed throughout the census block group in which they are contained; (b) fails to include drop wire and terminal expenses; (c) uses census block groups while LEC networks were constructed and, hence, costs incurred, on a wire center basis; (d) many census block groups are being assigned to the wrong wire center; and (e) BCM did not include business lines in sizing plant.

BCM2

Overall the modifications reflected in BCM2 improve the model considerably and bring the proxy costs for each state more in line with each states actual costs. The principle modifications reflected in BCM2 are:

> (a) BCM2 makes an adjustment in determining the location of households in sparsely populated areas. (b) BCM2 includes dropwire and terminal investment. © BCM2 takes into account the relationship between lines and expenses. In addition, it employs three annual cost factors: (1) a cable and wire factor; (2) a circuit equipment factor; and (3) a switching equipment factor. (d) BCM2 takes into account economies of scale that arise from providing business lines in a given area and thereby improves the model's estimating quality.

CPM

There are several positive features associated with the CPM model that are not found in the BCM2 model:

> (a) CPM uses grid cells as its geographic area. A grid cell represents a uniform and relatively small geographic area. A grid cell can be assigned to the wire center that actually serves the centroid of the grid cell rather than having to assign the geographic area to the nearest wire center as is the case for BCM2. (b) There is a similarity between the BCM2 and the CPM models. For approximately 77 percent of BellSouth's wire centers in Florida, the CPM and BCM2 models produce results that are within 15 percent of each other.

Hatfield Model

This model still suffers from numerous deficiencies.

The model is deficient because the Hatfield model: (a) is in a state of constant change; (b) many of the algorithms have not been disclosed; (c) it is difficult to fully evaluate and analyze the model.

It would appear that the revisions to the Hatfield model are result driven and the model can be adjusted to produce whatever cost answer its sponsors desire.

Universal service support should be based on book costs.

If a proxy model is used, then select a model that is sound from engineering and economic perspectives. In this regard, both the BCM2 and CPM models are superior to the original BCM model or the Hatfield model.

BCM2 model and the CPM model can be merged into a single model and is participating with an industry group to achieve such a result.

California PUC

Supports the CPM because:

(1) the CPM's grid cell design is more conducive to an accurate representation of costs; (2) the CPM is more open and accessible to changes in assumptions and inputs; (3) the CPM is easier to verify with regard to California data; (4) CPM would have created $1.7 billion universal service fund liability, but it is suggested to reduce that liability by $1.452 billion.

To reduce the liability CPUC recommends to:

limit the fund to support one line per household (17% of California households have second lines, this adjustment reduces the number of lines subsidized from approximately 4.52 million lines to 3.52 million lines); allow high cost recovery for only half the cost of placing the drop plant due to Pacific Bell's standard engineering practice of burying two

copper pairs per household; revise copper cable costs; adopted GTE's estimate of the cost of conduit; modify the cable sizes; extend the cut-off of copper feeder versus fiber feeder from 9,000 to 12,000 feet; higher feeder fill factor than proposed by the CPM sponsor but does not alter the proposed distribution fill factor; agrees with the AT&T/MCI witness that a network for providing universal service should be subject to less obsolescence than a network designed to accommodate a variety and discretionary and potentially competitive services, and thus, requires the use of the Commission approved depreciation lives; require switches to be sized according to the number of lines at the wire center rather than by density zone tables; disallow the urban outside plant adjustment because GTE's actual practices show that no cost difference exists, and the anecdotal evidence supports the adder for business districts and commercial centers rather than residential neighborhoods; assign $2.00 of shared and common costs to the universal service fund cost estimate rather than the $6.70 sponsored estimate; set the benchmark at the statewide $18.39 average cost; and the state fund will support the difference between the Census block cost and the benchmark less offsets from local rates, CCLC, EUCL, and interstate universal service fund revenue.

GTE

Cost estimates would merely be a starting point that will be superseded by operation of the auction, which will provide a means to correct estimating errors. Auctions will be more effective than any cost model in measuring the true value of market intervention.

It is not necessary to adapt the model over time to reflect other firms' technology, or changes in the definition of universal service, since these will be captured automatically by the auction process.

None of the models yet proposed is sufficiently developed to provide estimates suitable for use as the staring point for the Federal plan, however, the CPM and BCMII show considerable promise. Hatfield is not suitable for use in the Federal plan.

CPM includes many network components omitted from the BCM 1. It also calculates costs in a way less likely to underestimate them. Preliminary results suggest that the BCMII

produces estimates that are closer to the actual level of investment experienced by GTE.

The wire center unit is too large. The use of CBGs raises certain difficulties. In rural areas CBGs become quite large so that they are no longer as effective in distinguishing low and high cost customers. CBGs in urban areas is a problem because they are only based on household data. The CPM's grid square is constant is size, data on household is available from a commercial vendor and an estimate of daytime population (business) is also available. Census Blocks (CB) may be useful to provide more granularity than CBGs, however, business demand by CBs may not be available. A hybrid approach may prove useful, CBGs are used for high density areas and grid squares or CBs for low density areas.

The mismatch between wire centers and CBGs does create some concern.

The use of terrain variables at the CBG level is limited because the model can only capture an average value for each variable. For example, in mountainous areas, all of the customers may be located on a valley floor.

None of the models actually measure TSLRIC costs. Many of the firms outputs are not considered by the models at all. However, there is no obvious reason why it is necessary to measure TSLRIC in order to estimate the market price of the core service.

The CPM and BCM models differ in the amount of simulation that is done within the model itself. In the BCM, the emphasis is on the algorithms, while in the CPM the emphasis is on the tables. In the BCM, algebra is used to develop loop lengths and cable size, while in the CPM this information is developed externally, base on information specific to Pacific Telesis and reflected in unit cost tables which are input to the model. In the CPM the unit cost for feeder may assume a given cable size and allow for a separate structure for each cable. In a real office,

however, several cables may share a route, so that the structure cost per cable is less. GTE has proposed that in California the unit cost inputs for the CPM be developed using an external process.

CPM

The CPM should group wire centers into zones by lines rather than density for purposes of calculation.

Pair gain devices in the CPM should be set to ensure that such devices are no farther than 12,000 feet from the customer which is consistent with GTE's network practices.

CPMs approach to estimating business line is not accurate. ILECs have this information today, by business and residence.

Switching costs in the CPM do not fully capture the deference in unit costs between large and small switches and the level of costs used by Pacific are not representative of those experienced by other companies because of unique contracts Pacific has negotiated with its switch suppliers. GTE is also concerned that most of the expenses in the CPM are reflected as constant amounts per line, regardless of where the line is located.

BCM

Chief concern of the BCM 1 is the use of multiplicative factors to drive most of its costs as a function of materials costs, the incorrect specification of structure costs as a function of cable size, and the distribution plan algorithm. The model places 400 pair cable in places that are actually likely to be served by 25 pair cable. While many concerns have been addressed in BCM 2, these concerns are worth noting because they are still contained in the Hatfield Model, which

is based on the BCM.

BCM 2 adds info on roads, has a more detailed algorithm for distribution plant, and has largely eliminated the multiplicative cost factors which were the weakness of BCM 1.

Preliminary tests of BCM2 suggests that it does a better job of predicting actual costs than BCM1 did. Due to limited time to analyze BCM2 it is premature to propose any specific changes to the model. A false sense of precision is created when a very detailed simulation is based on very sparse data, however GTE finds BCM2 to be a significant improvement and will work with its sponsors to suggest further improvement.

JURISDICTION

The models estimate cost on a total service unseparated basis. The should determine what portion of this amount is to be supported through the Federal plan by choosing an appropriate level of the Federal affordability benchmark.

HATFIELD

The model is internally inconsistent, has never been empirically validated and it is based both on conceptually and empirically on a static notion of costs therefore the model is useless.

Fill factors are too high, costs of capital are too low and depreciation rates that are too slow.

Any function or cost model that fails even one of the criteria required of a cost function cannot represent the minimum cost of producing services using the best forward looking technology.

The model underestimates TS/TELRICs by half.

The model does not seem to have been run through the set of theoretical and empirical

tests that are routinely used to ferret out modeling errors.

The model produces a curious anomaly; doubling the price of cable results in a near doubling of the cost of installation.

The model cannot be fixed to produce the correct TS/TELRICs. The multiplicative structure of the model based on expenditure levels rather than unit levels is totally at odds with valid costing principles. Using historical expense factors make it backward rather than forward looking.

Because it is a static rather than dynamic model, it mishandles growth and underestimates the true forward-looking cost of capital.

Maine, Montana, New Mexico, Utah, Vermont, and Wyoming Commissions

The comments are directed at BCM2.

Until the various inputs to the models can be demonstrated to have a direct correlation to cost causality and its magnitude, proxy models are not appropriate for determining prices.

BCM2 vastly underestimates the impact of loop length caused by slope. The models proponents need to provide more documentation about their models, including data sources and specific algorithms for arriving at each of the user-defined input values.

The switching costs used in BCM2 are not appropriate for rural areas where customers must be served by very small switches or remote. Recommend that per line switching costs be modeled for switches having less than 100 lines, 100 to 500 lines, 500 to 1000 lines, 1000 to 5000 lines and 5000 to 10000 lines.

The magnitude of the slope multiplier is not large enough, it should large enough to

convert the point to point distance calculated in the model to route miles of plant.

The higher costs of operations and maintenance in remote areas are not reflected in BCM2. BCM2 costs are based on ARMIS 1995 data, and thus are historical rather than forward-looking.

CBGs are inappropriate for rural areas, and smaller areas should be used.

Use of a road system to determine where households are assumes that if there are no roads the are no people. That is incorrect. BCM2 caps loop costs at $10,000, assuming that wireless would be used for areas with costs above that. However, it may be impossible to serve those people with wireless service due to technical, environmental or logistical problems, including the lack of electricity.

BCM2 also assumes the same traffic factors exist nationwide, but traffic varies significantly between areas.

MCI

The purpose of a proxy model should be to compute the forward-looking costs of a network built using the most efficient technology.

The Hatfield model does not compute the US funding requirement, a future version will.

The Hatfield model more accurately reflects the configuration of a real network than BCM1 since it assumes that both that feeder cable extends into the CBG and that the number of distribution legs vary by density.

Hatfield may not reflect the cost of existing networks since its purpose is to compute the cost of an efficient network, not the cost of an existing network. The model for the most part

uses depreciation lives and cost of capital allowed by the Commission and the States.

The reasonableness of BCM2's business line estimate cannot be verified because it uses an unidentified public source; Hatfield, on the other hand, uses an identified, publicly available source.

Hatfield computes installation costs in a more desegregated manner than BCM2, calculating buried and underground cable costs separately.

Hatfield sizes the switch in each office by considering the actual traffic originating and terminating in the office.

BCM2 does not model the costs of wireless technologies; it merely assumes that for any investment above $10,000 per loop wireless would be less expensive.

BCM2 does not attempt to model interoffice network costs.

CPM has two major drawbacks: it employs proprietary data on the location of all residential and business customers; and it has only been developed for California.

MFS

A proxy model should be used as the basis for US support rather than embedded costs.

The US mechanism should emulate and encourage the development of competition rather than guarantee incumbent's recover of embedded costs.

A proxy model should reflect the costs of the most efficient provider using the most efficient technology.

Any proxy model should develop costs only for the core services set out by the Joint Board.

An industry forum should be directed to develop an appropriate proxy cost model.

The Joint Board does not need to have a complete, comprehensive model developed within the statutory time limits, but can allow an industry forum to address the technical details.

USF support could be based on the difference between proxy costs for small geographic areas and 130% of the national average proxy costs.

National Cable Television Association (NCTA)

BCM2 plant specific annual cost factors are lower than the ARMIS factors in BCM.

There is no documentation for these lower factors.

BCM2 non-plant specific expenses are excessive, and that alternative analysis of expenses factors shows that costs can be reduced.

BCM2 switching costs are in line with the Hatfield estimates and significantly lower than BCM switching costs.

BCM2 includes remote switches, which is an improvement over BCM, BCM2 merely places remote according to current practices rather than determining where a remote should replace a small stand alone unit.

BCM2 improves on BCM by allowing limited user flexibility in determining the fiber-copper crossover point; limiting households to within 500 feet of either side of a road network in low density areas; and including business and second residential lines.

BCM2 has increased the structure and placement costs so that cost per line increased by 31%.

BCM2 fill factors are approximately the same as the Hatfield model.

NCTA prefers to aggregate at the wire center level rather than at the CBG for the determination of high cost funds.

BCM2 does not allow users to aggregate to the wire center level.

National Exchange Carrier Association (NECA)

NECA compares the outputs from BCM2 with USF data. It shows that:

1) the BCM2 average loop cost is higher than the USF average loop cost;

2) the model results and USF data vary by greater amounts as the study area line size decreases; and

3) Universal service support, measured according to the Part 36 rules for the existing USF, increases as the geographic region used to measure support requirements decreases from the current study areas, to the wire center level and then to the Census Block Group.

NYNEX

Supports use of proxy models only for price cap companies and their competitors.

Do not believe cost estimates from the models are sufficiently accurate for use by small companies.

BCM2 is an improvement over BCM, but further improvements may be appropriate.

Lacking data for the NYNEX region, they have not evaluated the specifics of the CPM.

Lack of documentation for the Hatfield model.

Hatfield significantly underestimates LECs' incremental costs due to:

(1) excessive fill factors;

(2) use of unrealistic switch prices and installation schedules;

(3) use of unrealistic cable facilities costs; and

(4) use of unrealistically low depreciation rates.

Hatfield's cost of capital is too low(testimony of Timothy Tariff).

BCM2 is the best currently available model.

Pacific Telesis

California adopted the CPM as the more appropriate model for estimating the cost of basis local service in California.

The BCM 1 is no longer sponsored by any party.

While differences remain between the CPM and BCM2, the models are producing very similar results for California.

The CPM yielded a total loop cost of $2.9B, while the BCM2 yield was $2.6B.

The two models might be combined.

The CPM uses actual switching equipment prices paid and properly reflects the long run incremental analysis of switch prices, taking into account actual variability in prices over time.

The CPM properly uses actual fill factors rather than objective fill factors because that is how the network is built.

The Hatfield model is incomplete, it uses factors, rather than actual costs, to calculate total loop costs.

Hatfield omitted certain costs such as engineering and cable splicing costs.

Hatfield estimates the cost of cable materials and then takes the estimated cost and applies and factor to attempt to estimate total loop costs including structures, engineering and installation.

Since cable materials account for only about 20% of loop investment, the derived cable multiplier accounts for the other 80%.

Hatfield understates switch investment and costs.

Hatfield does not model the way distribution plant is actually engineered today.

Hatfield assumes unreasonably long economic lives for investment.

The grid targets costs and minimizes the problem of incorrectly assigning customers to the wrong wire center and ultimately the wrong company.

Hatfield uses CBGs which may result in too much averaging of costs.

CPM separates operating expenses from investment unlike other models that where operating expenses are driven by investment.

CPM can flexibly accommodate differences between smaller companies which have higher fixed costs and lower equipment purchasing power and larger companies where the opposite is true.

Hatfield uses algorithms that are hard coded into the software. For example, the cable multiplier used to estimate 80% of the loop investment is a locked item.

Many Hatfield parts of the model cannot be verifiable.

Hatfield uses embedded cost factors and incorrectly represents the results as an incremental study.

Hatfield contains errors that incorrectly determine the cost factors it applies to investments.

Hatfield consistently either understates or omits expenses.

Hatfield understates switching and loop investment and the costs of support structures.

The primary difference between the CPM and Hatfield models is the investment per line. This investment difference cause the capital costs for the Hatfield Model to be less than half the CPM value.

Hatfield costs results for loop maintenance and network operations are close to CPM values. Hatfield appears to significantly overstate the loop maintenance costs for the network interface device.

Rural Telephone Coalition (RTC)

It is premature to use a proxy model.

More study of the models is required.

Models could be detrimental to small and rural companies.

BCM2 and Hatfield are replete with unproven assumptions.

Since Hatfield is based on BCM1, which is flawed, it also should not be used.

Concerned with the use of a purely incremental costing approach. That approach would not yield sufficient recovery to achieve the requirements of the Act that US support mechanism be specific, predictable, and sufficient. Also, the Constitution does not permit the Commission to deny carriers the opportunity to recover prudently incurred real costs of their real, existing